

REMARKS

Claims 1-11, 16, 17, 19, 21-32, 34-37, 44-76 and 85-88 are pending in the application.

Claims 1, 6-11, 16-17, 19, 21, 24-28, 32, 34-35 and 44-58 have been amended to recite that the devices comprise a *plurality* of stiffener components secured to a substrate without attachment with an adhesive element. Support for the amendments to the claims is in Applicant's published application (US 2203/0155636) at *paragraph [0049]* ("...It is contemplated that a plurality of stiffeners can be disposed on lead frame 6 of lead frame assembly 24. Further, each of the plurality of stiffeners can comprise various configurations (e.g., size and/or shape)).

New Claims 86-88 have been added, as supported in the published application at *paragraph [0043]* ("...In other embodiments, molded stiffener 26 can also be disposed on surface 28 of lead frame 6 in the form of a strip, a plate, a ring, a rectangle, a square, an oval, and the like...").

No new matter has been added with the amendments or the new claims, which are intended to merely clarify language used in the claims and the subject matter claimed. The scope of the claims is intended to be the same after the amendment as it was before the amendment.

Rejection of Claims under 35 USC § 102(c)/103(a) (Mitchell)

The Examiner rejected Claims 1 and 85 under Section 102(c) as anticipated by USP 6,602,740 (Mitchell), and Claims 3-8 as obvious under Section 103(a) over Mitchell. These rejections are respectfully traversed.

The Examiner cites to Mitchell particularly to Figure 5 and col. 3, lines 50-61 and col. 9, lines 27-30, stating as follows (emphasis added):

As to claims 1, 85, Mitchell discloses a substrate 110 (fig. 5); and a molded plastic stiffener component 142 (fig. 5, col. 3, lines 50-61; col. 9, lines 29-30) *secured to the substrate* without attachment with an adhesive element, the stiffener component 142 is inherently to increase rigidity of the substrate 110.

The Examiner's interpretation of Mitchell's device in Fig. 5 is incorrect.

First of all, Mitchell does not teach that element 142 is a *stiffening element* to stiffen or make a substrate *rigid*. Rather – element 142 is a dam or enclosure for containing an encapsulant material on the substrate 110.

Second, the *dam 142* is not "molded to" nor is it "secured to" the substrate 110.

Mitchell particularly teaches that the *dam 142* and substrate 110 are a single piece.

See Fig. 5 and at col. 3, lines 54-55, and col. 9, lines 28-30 (emphasis added):

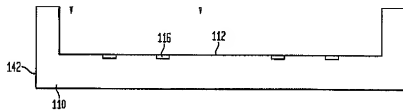


FIG. 5

...The dam may also be integrally formed with the substrate, whereby the substrate and the dam are a single piece...

...

FIG. 5 shows still another preferred embodiment of the present invention whereby dam 142 is integrally molded with substrate 110...

Claims 1 and 85 recite a device defining a plurality of *stiffener* components secured to (or attached to) the substrate without adhesive attachment.

The claims do not recite a substrate with an "integrally molded" stiffener.

Mitchell does not teach or suggest Applicant's device as claimed. Accordingly, withdrawal of this rejection is respectfully requested.

Rejection of Claims Under 35 USC § 103(a) (Mitchell with Lim)

The Examiner rejected Claims 2-8, 11, 37 and 85 as obvious over the Mitchell in view of USP 6,020,221 (Lim). This rejection is respectfully traversed.

The Examiner asserts that it would be obvious to modify Mitchell's device with the various materials taught by Lim.

The claims at issue recite a device defining a *plurality* of stiffener components secured to a substrate without adhesive attachment.

For the reasons stated above with regard to Mitchell's failure to disclose the recited elements of the claims, the proposed modification of Mitchell's device with Lim's materials would not result in Applicant's devices as claimed.

Mitchell, either alone or combined with Lim, does not teach or suggest Applicant's devices as claimed. Accordingly, withdrawal of this rejection is respectfully requested.

Rejection of Claims under 35 USC § 103(a) (Mitchell with APA, Culnane)

The Examiner rejected Claims 9-11, 16-17, 23-24, 28, 34-35, 44-46, 48-49, 55-58, 60, and 62-76 as obvious over Mitchell in view of "Admitted Prior Art" (APA), citing to Applicant's Figures 1-2 and the specification at pages 1-2.

The Examiner also rejected method Claim 47 as obvious over the Mitchell in view of APA, further in view of USP 6,517,662 (Culnane), citing to Culnane at col. 6, lines 34-50 and Figure 1.

These rejections are respectfully traversed.

First of all, the claims at issue recite a device defining a plurality of stiffener components secured to a substrate without adhesive attachment. For the reasons stated above with regard to Mitchell's failure to disclose the recited elements of the claims, the proposed modification of Mitchell's device with either the APA or Culnane's disclosure would not result in Applicant's devices as claimed.

Secondly, the Examiner's statements regarding the "APA" are in error.

At page 5, the Examiner cited to APA as disclosing a stiffener 14 in Figure 1 (prior art) as "*molded to the substrate 6.*"

At page 6, the Examiner cited to APA, stating as follows:

As to claims 44-46 and 64-66, 75, APA teaches that the molded stiffener 14 is transfer molded, injection molded, or spray molded to the substrate....(fig. 1)...

Contrary to the Examiner's statements, the "APA" specifically teaches adhesively attaching a stiffener to a substrate. See Applicant's published application US 2203/0155636, Background discussion at paragraphs [0003]-[0006].

[0003] Referring to FIG. 1, a prior art semiconductor die package 2 ...is shown. Package 2 typically comprises a lead frame 6 (or other substrate), adhesive element 8, one or more dies 10, adhesive element 12, a metal or plastic stiffener 14, and an encapsulating material 16...

[0004] The package illustrated in FIG. 1 can be assembled by first constructing a die assembly 24. ...After die assembly 24 is assembled, plastic or metal stiffener 14 is secured to lead frame 6 of die assembly 24 with adhesive element 12...

...

[0006] Plastic stiffeners have also been used to support a lead frame. Typically, in those cases where a plastic stiffener is used, a thermoplastic or thermosetting polymeric material is heated and introduced into a mold and, upon cooling, the mold is opened and a plastic stiffener is

produced. Thereafter, the plastic stiffener is secured to the lead frame using an adhesive tape or paste.

In the background discussion of the prior art, Applicant clearly states that prior art stiffeners are attached to the substrate by an adhesive.

The combination of Mitchell with "APA" would not provide Applicant's devices as claimed. Nor do those disclosures teach or suggest Applicant's methods of securing a plurality of stiffeners to a substrate as recited in any of Claims 44-54 and 62-76.

As for Culnane, that reference (*like the APA*) teaches bonding a stiffener 10 using an adhesive 20 attachment.

Culnane does not teach forming a stiffener by applying a material onto a substrate and hardening the material by heating, cooling, or curing. Rather, Culnane teaches applying heat and pressure to cure an adhesive 20 – which attaches the stiffener material 10 to substrate 4.

Mitchell, either alone or combined with APA and/or Culnane, does not teach or suggest Applicant's invention as claimed. Accordingly, withdrawal of this rejection of the claims is respectfully requested.

Extension of Term. The proceedings herein are for a patent application and the provisions of 37 CFR § 1.136 apply. Applicant believes that no extension of term is required. However, this conditional petition is being made to provide for the possibility that Applicant has inadvertently overlooked the need for a petition for extension of time. If any extension and/or fee are required, please charge Account No. 23-2053.

It is respectfully submitted that the claims are in condition for allowance and notification to that effect is earnestly solicited.

Respectfully submitted,

Kristine M. Strodthoff

Kristine M. Strodthoff, Reg. No. 34,259

Dated: February 13, 2007

WHYTE HIRSCHBOECK DUDEK S.C.
555 East Wells Street, Suite 1900
Milwaukee, Wisconsin 53202-3819
(414) 273-2100
Customer No. 31870